

VIRGINIA STANDARDS OF LEARNING

Spring 2004 Released Test

**GRADE 8
SCIENCE**

LARGE PRINT FORM

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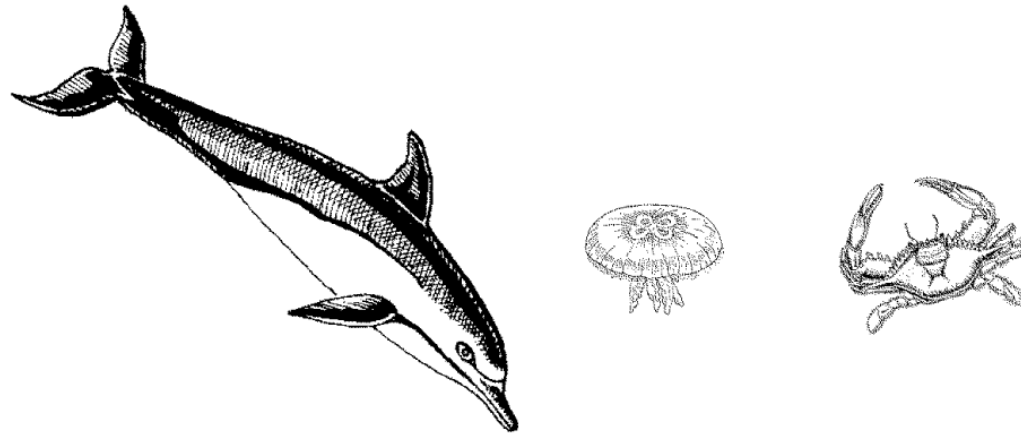
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DIRECTIONS

Read each question carefully and choose the best answer.

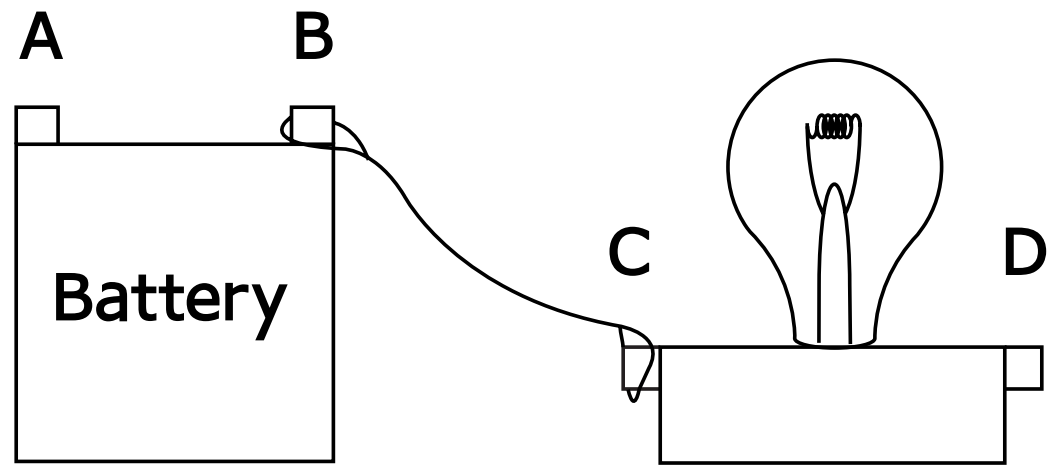
SAMPLE



These animals are grouped together because all of them

- A live in the water
- B are fish
- C are warm-blooded
- D lay eggs

1



In order to turn on the light, a piece of wire needs to be connected from

- A A to C
- B A to D
- C B to C
- D C to D

2 Common Radicals in Minerals

Radical Name	Symbol
Carbonate	$-\text{CO}_3$
Silicate	$-\text{SiO}_3$
Sulfate	$-\text{SO}_4$
Oxide	$-\text{O}$

Which of these minerals is a carbonate?

- F Calcite (CaCO_3)
- G Galena (PbS)
- H Gypsum (CaSO_4)
- J Magnetite (Fe_3O_4)

3 A plant's green color is due to the presence of which organelle?

- A Chloroplast
- B Nucleus
- C Mitochondrion
- D Vacuole

Bear Ranges and Food Sources

Species	Range	Foods
Brown bear	Europe, Asia, Canada, Western U.S. and Alaska	Fruits, nuts, roots, insects, fish, small vertebrates, and carrion
Black bear	Canada, U.S., Northern Mexico	Fruits, berries, nuts, roots, honey, insects, rodents, fish, and carrion
Polar bear	Arctic	Seals, fish, seabirds, hares, caribou, and musk oxen
Panda	Mountains of Central China	Bamboo stems and leaves

Which of these species would be MOST in danger of becoming extinct if one of their food sources became unavailable?

F Brown bear

G Panda

H Polar bear

J Black bear

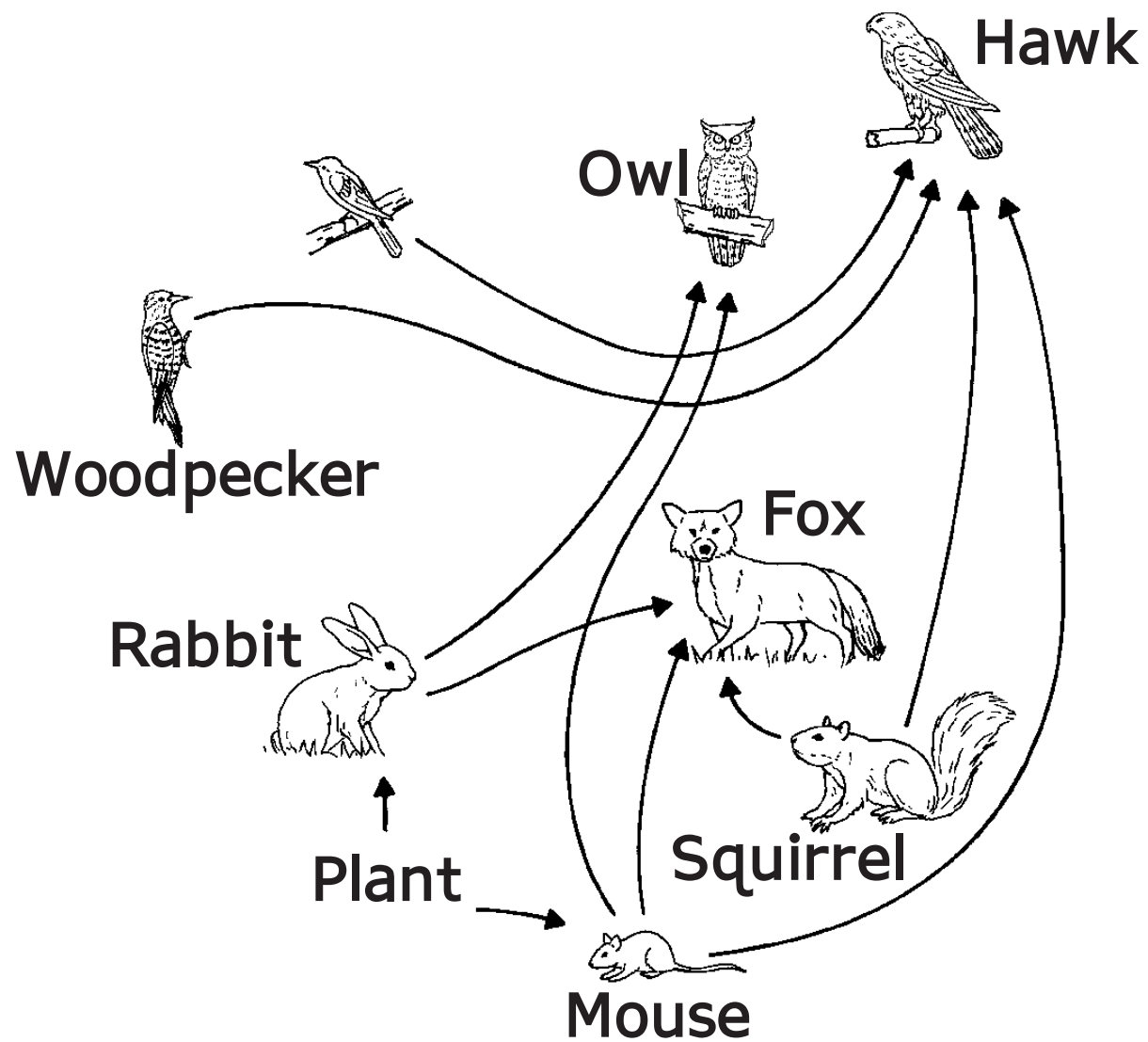
5 Which of these has the greatest influence over how big a baby elephant will grow?

- A The amount of oxygen in the air
- B The amount of food available
- C The size of the trees in the jungle
- D The type of grass on the plains

6 At what speed would a car have to move in order to travel 20 kilometers in two hours?

- F 5 km/hr
- G 10 km/hr
- H 20 km/hr
- J 40 km/hr

- 7 The quality of air is monitored by the government to determine whether a city needs to take steps to control air pollution. To best measure air quality, the air should be tested
- A once a year on a day with very little vehicle traffic
 - B once a day during rush hour when the most cars are on the road
 - C several times a day in all kinds of weather
 - D at night when the air is probably less polluted



In the food web shown, which of the following consumers eats only producers?

- F Hawk
- G Owl
- H Fox
- J Mouse

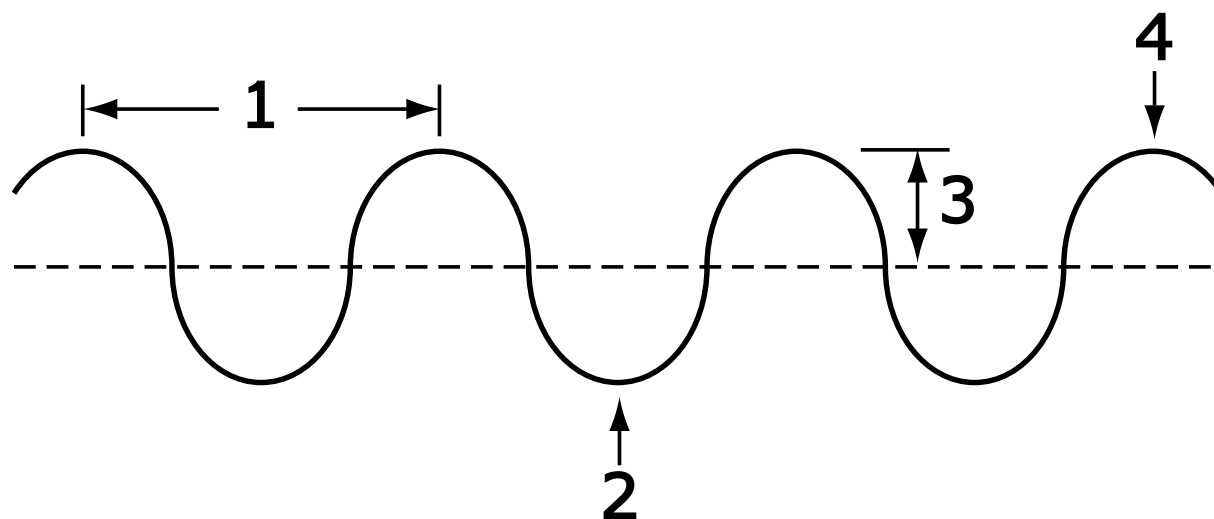
9 Which body in the solar system usually contains an atmosphere?

- A An asteroid
- B A planet
- C A meteor
- D A comet

10 Which of the following is used to measure the mass of an object?

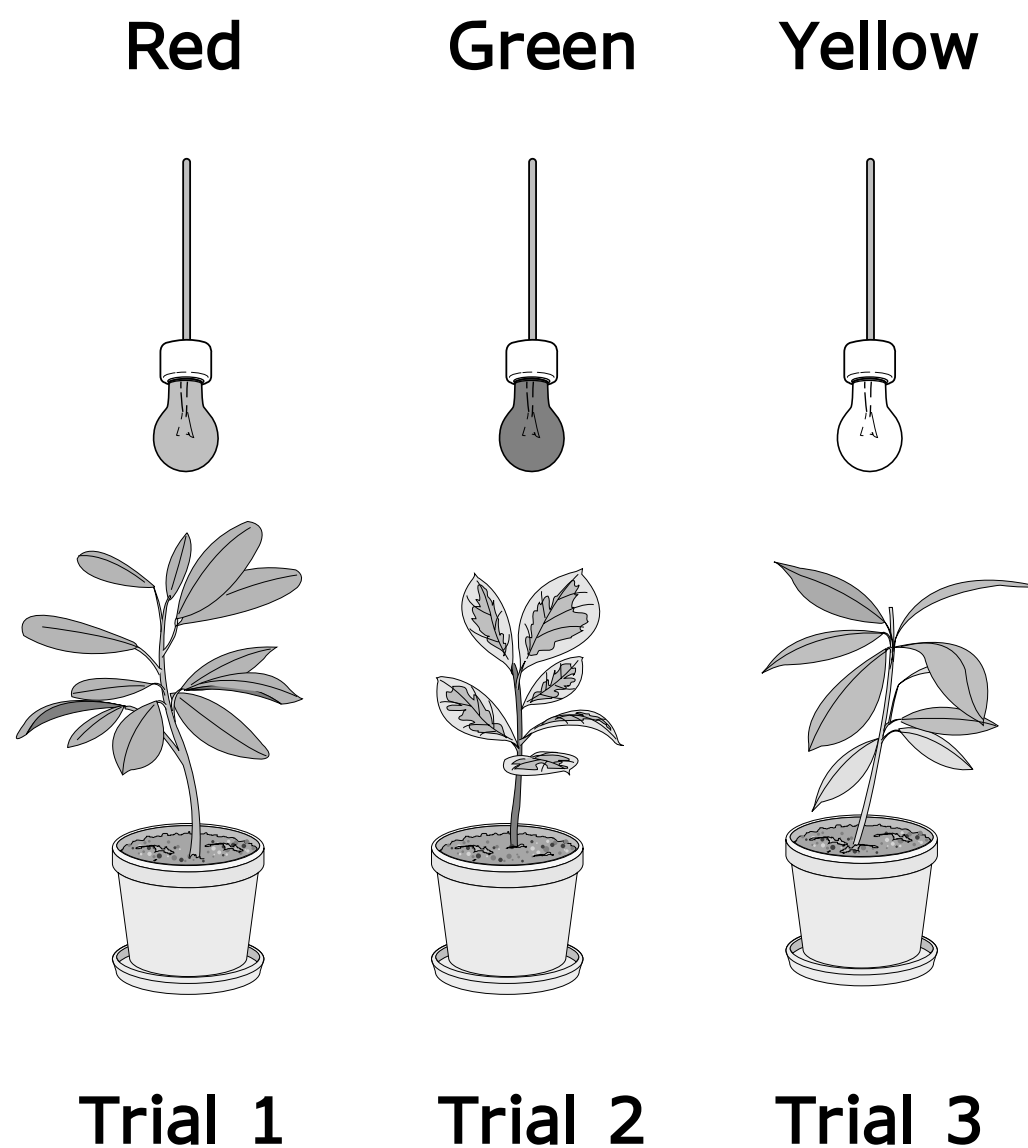
- F Balance
- G Metric ruler
- H Graduated cylinder
- J Barometer

11



The area that shows the amplitude of the wave is

- A 1
- B 2
- C 3
- D 4



This experiment was set up to test the hypothesis that plants grow faster in green light. The same amount of water and fertilizer were added to each pot. Which of these would improve the experiment?

- F Use green lights for all three plants
- G Add more types of plants
- H Use the same kind of plant in all trials
- J Use different pots for each plant

13 Which of these resources would give the most current, complete and accurate information on planets?

- A Planet website by Round Rock Middle School**
- B The NASA website**
- C A set of general encyclopedias**
- D A science book about the planets**

14 Which of these planets in the solar system was the most recently discovered?

- F Mars**
- G Venus**
- H Jupiter**
- J Pluto**

15 Electric bills are calculated based on the amount of energy consumed. The consumption is measured in units of

- A** newton meters
- B** millijoule seconds
- C** megavolt minutes
- D** kilowatt hours

16 Which system shows a transformation from chemical to electrical and light energy?

- F** A car battery causes the headlights to shine.
- G** A candle burns and lights up the room.
- H** A display of fireworks in the night sky.
- J** An avalanche rolls down a steep mountain.

- 17 A group of people were concerned about a new coal-burning power plant that might be built in their neighborhood. What is probably their main concern?
- A Burning coal produces more heat than burning wood.
 - B The heat from burning coal can drive generators that produce electricity.
 - C Burning coal produces sulfur dioxide which contributes to acid rain.
 - D There is more coal in the earth than there is oil and gas.

18 Which biome contains large populations of grazing herbivores, few species of birds, and deep, rich soil?

F A taiga

G A tundra

H A deciduous forest

J A grassland

19 Cells → Tissues → Organs → ?

What is next in this series?

A Habitats

B Organisms

C Systems

D Organelles

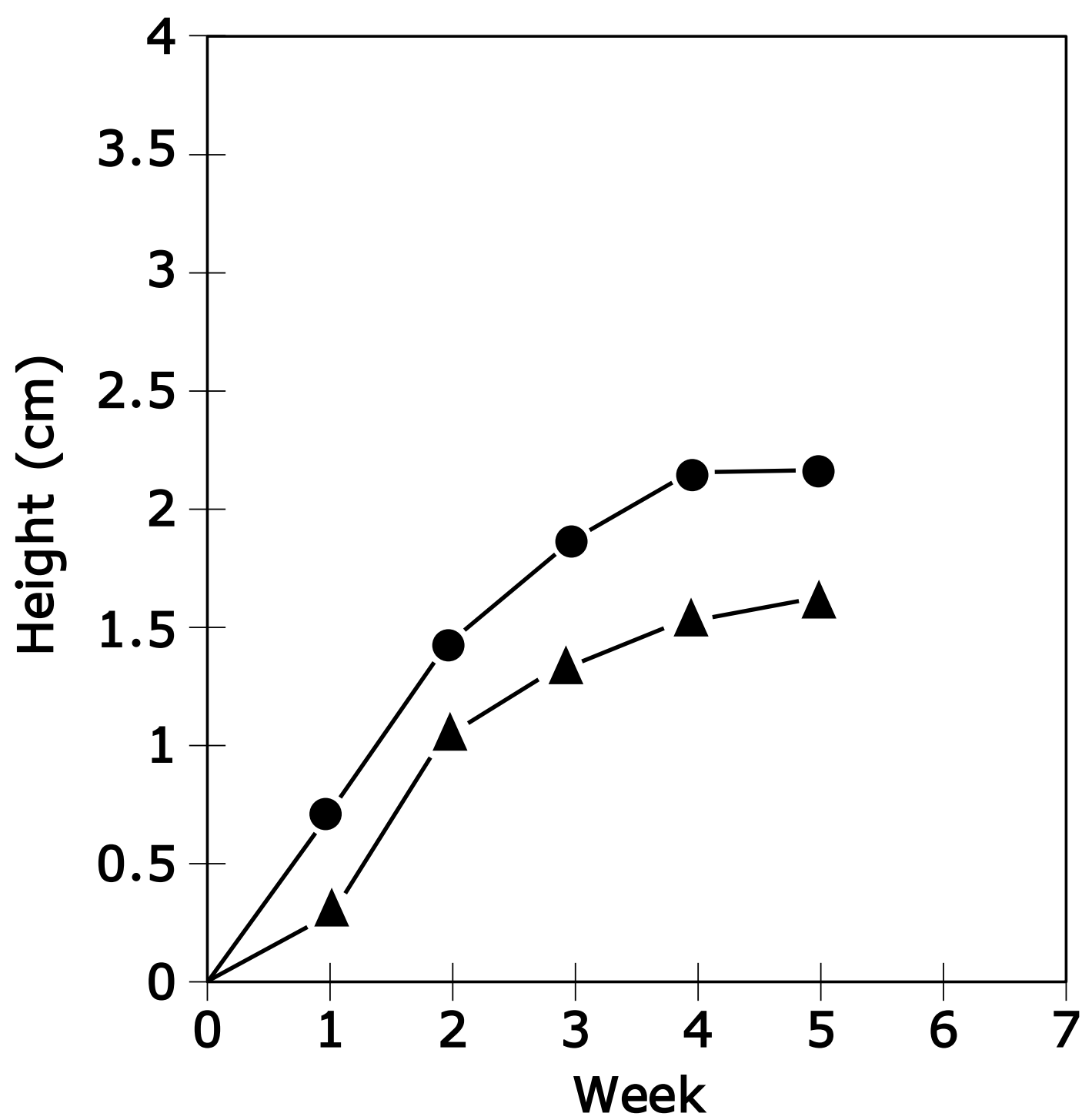
20 Which of these is due entirely to inheritance in humans?

- F Reading skill**
- G Eye color**
- H Endurance**
- J Broken bones**

21 Which of these is best classified as a mixture?

- A Carbon dioxide**
- B Water**
- C Soil**
- D Iron**

Effects of Fertilized
Soil on Plant Growth



Plant A ● Fertilized Soil
Plant B ▲ Unfertilized Soil

The line graph shows the heights of plants grown in fertilized and unfertilized soil. Based on this information, what will MOST likely occur on day six?

- F Neither plant should increase by 1 cm in height.
- G Plant A should increase about 1 cm in height.
- H Plant B should increase about 1 cm in height.
- J Plant A should increase about 2 cm in height.

23 Which of these belongs in the outermost shell (energy level) of an atom?

- A Electrons**
- B Protons**
- C Neutrons**
- D Photons**

24 The force that holds the planets in orbit around the sun is called

- F motion**
- G friction**
- H pressure**
- J gravity**

25 Ranchers historically have used genetics to produce new varieties of cattle. Buffalo can tolerate both hot and cold temperatures but have meat that is not as tasty and tender as beef. Cattle that are subjected to severe temperature extremes produce meat that is neither tender nor good-tasting. What good qualities might a “beefalo” (cross between cattle and buffalo) possess?

- A Animals that tolerate heat and cold but do not have good-tasting meat
- B Animals with good-tasting meat but not tolerance to heat
- C Animals that tolerate heat and cold and have good-tasting meat
- D Animals that tolerate cold but do not have good-tasting meat

26 How are humans classified within a food chain?

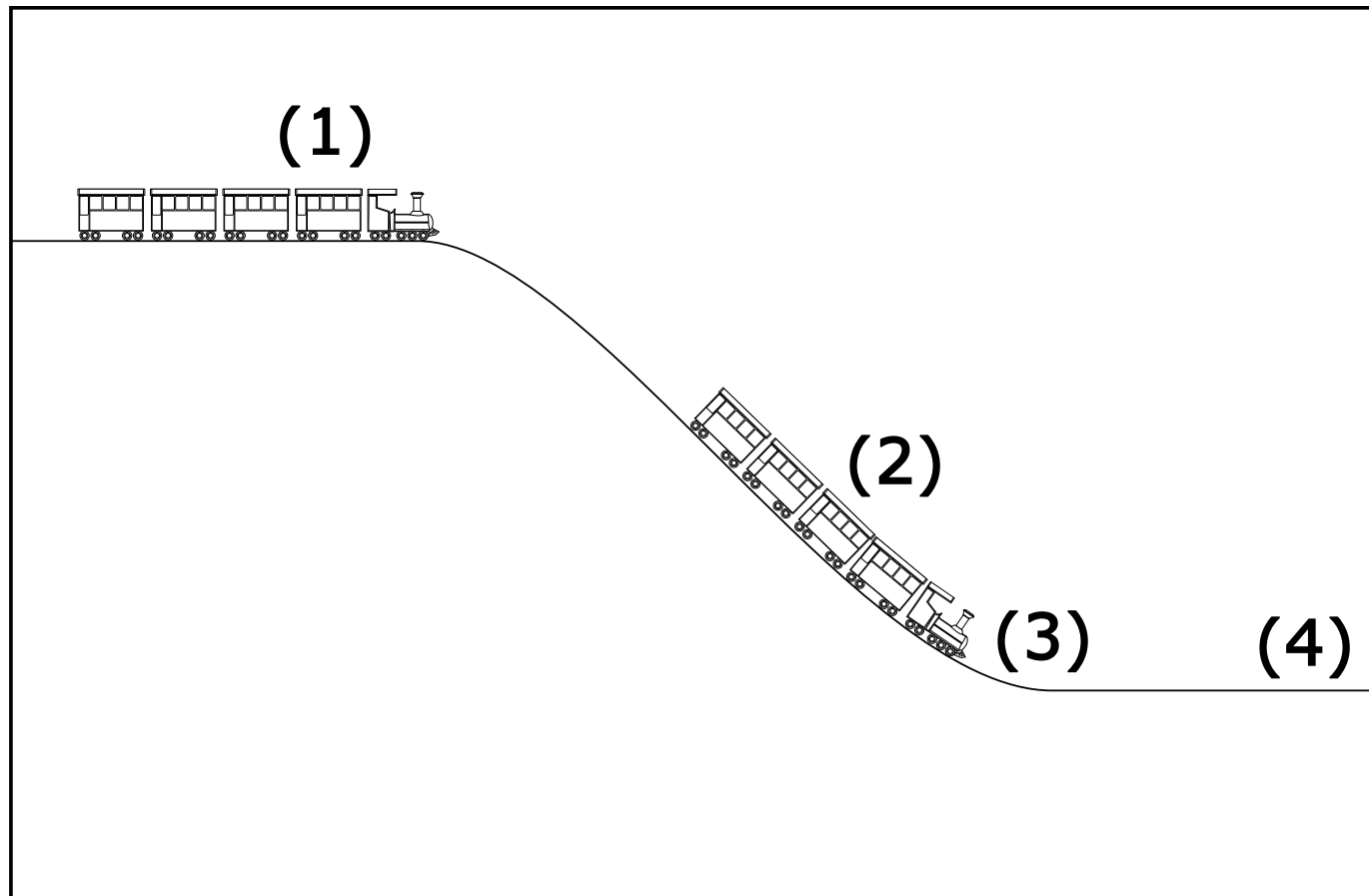
F Producers

G Consumers

H Decomposers

J Manufacturers

27



The location on the track where the train has the **GREATEST** potential energy is

- A 1
- B 2
- C 3
- D 4

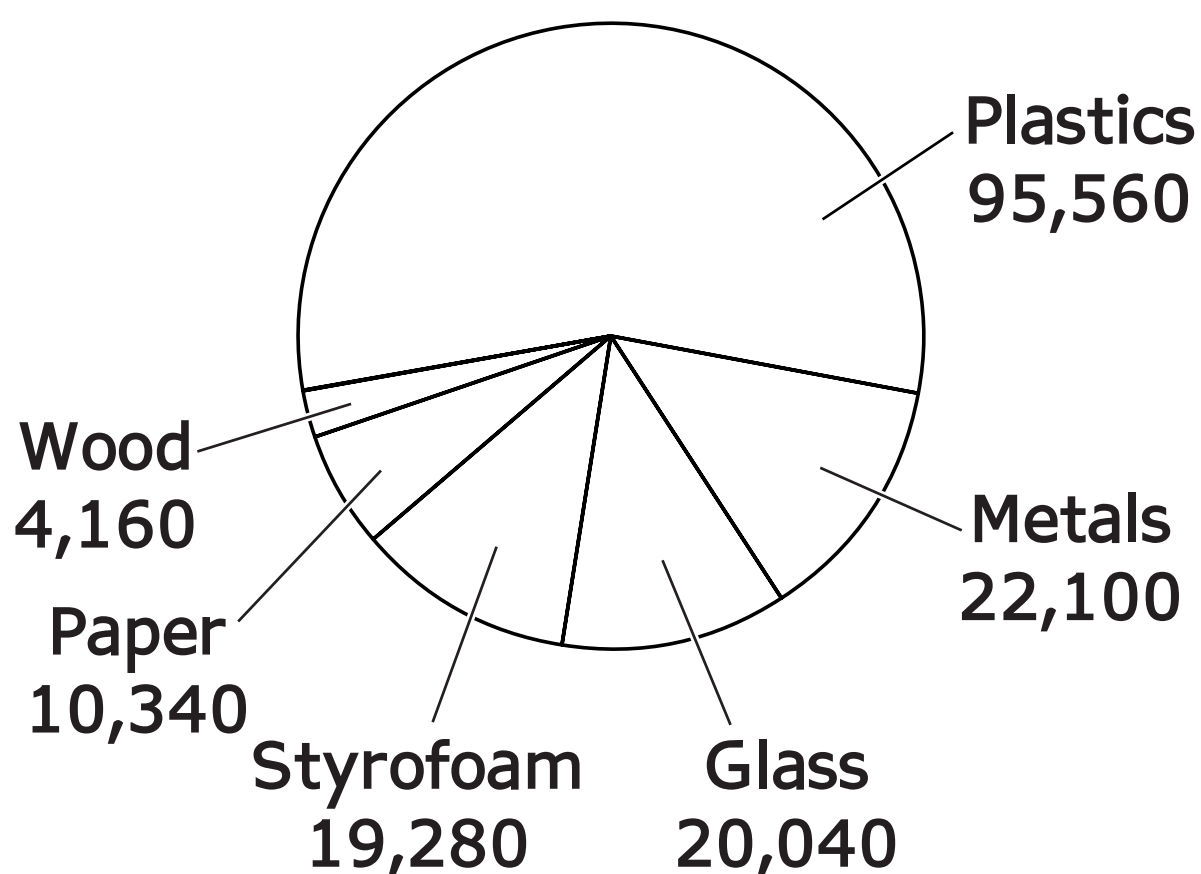
28 Convection is the result of

- F currents caused by the motion of heated molecules
- G increases in the density of solids
- H colder portions of liquids rising
- J the lack of heat transfer

29 If you break a piece of glass, the shape of the glass changes, but the properties in the fragments remain the same. Which of the following has occurred?

- A A chemical change
- B A temperature change
- C A phase change
- D A physical change

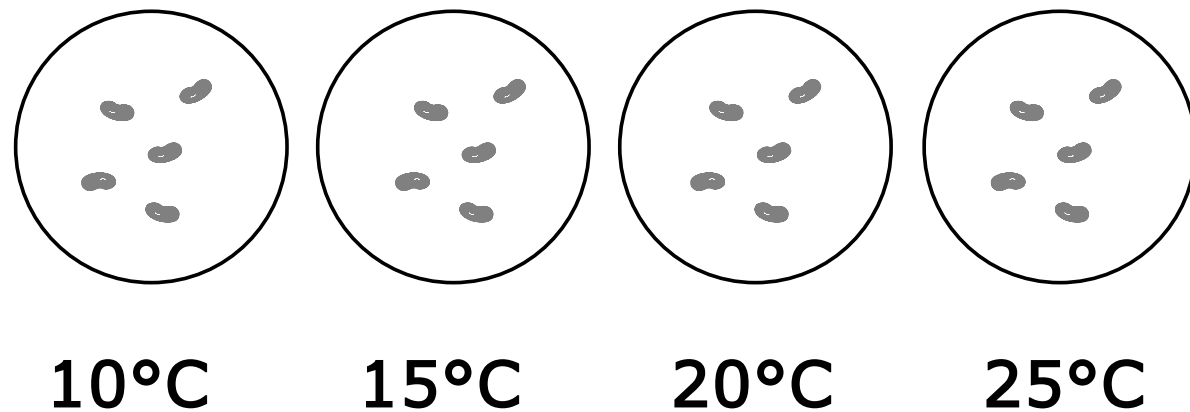
Items Collected in a Beach Cleanup



This chart represents the type and number of items collected in a beach cleanup. Based on the above chart, what percentage of the total items collected from the beaches was plastic?

- F 46%
- G 49%
- H 56%
- J 70%

31



Some snapdragon seeds were studied in the experiment above. The seeds were placed in a dish lined with a moist paper towel. Which of these is the independent (manipulated) variable in this experiment?

- A The type of seed
- B The amount of water used
- C The number of sprouts
- D The temperature of each dish

32 A substance made up of two or more elements that have been chemically combined is called

- F an atom
- G a compound
- H an element
- J a mixture

33 Which of the following is produced as a result of photosynthesis?

- A Heat
- B Water
- C Oxygen
- D Carbon dioxide

34 A proton has which of the following charges?

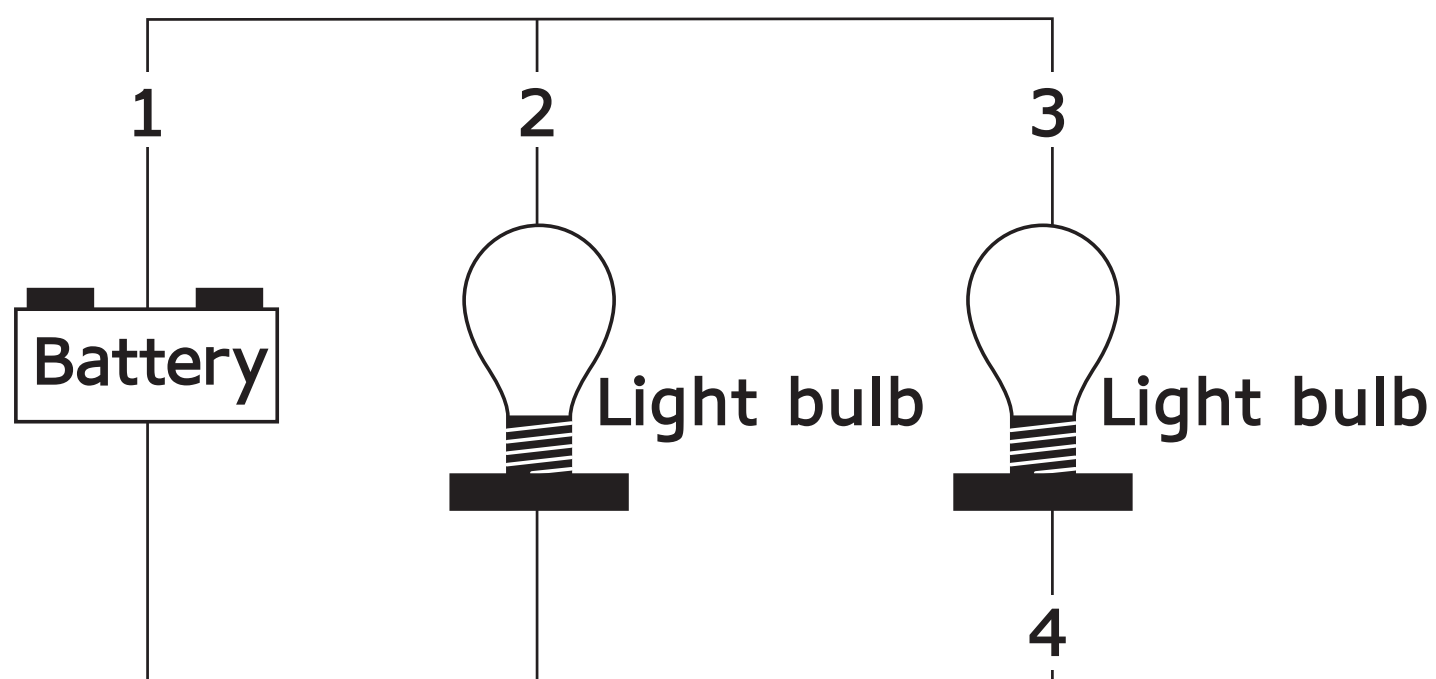
- F Negative
- G Neutral
- H Positive
- J Magnetic

35 Lions usually live in prides made up of a few adult females, an adult male, and some younger lions. The females hunt together and the kill is shared with the pride. The lions' method of hunting BEST illustrates

- A cooperation
- B competition
- C territoriality
- D parasitism

- 36 Which of the following are characteristics of the most productive ecological environment?
- F Stable temperatures and high rainfall amounts
 - G Hot temperatures and low rainfall amounts
 - H Cold temperatures and low rainfall amounts
 - J Low temperatures and high rainfall amounts
- 37 The sea urchin has radial symmetry. This means that its body parts are
- A equally arranged around a central point
 - B designed to function in seawater
 - C likely to be reformed if any part of the body is damaged
 - D able to function on land and in the water

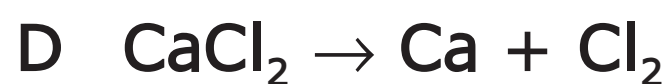
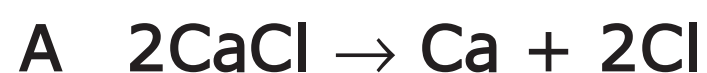
38



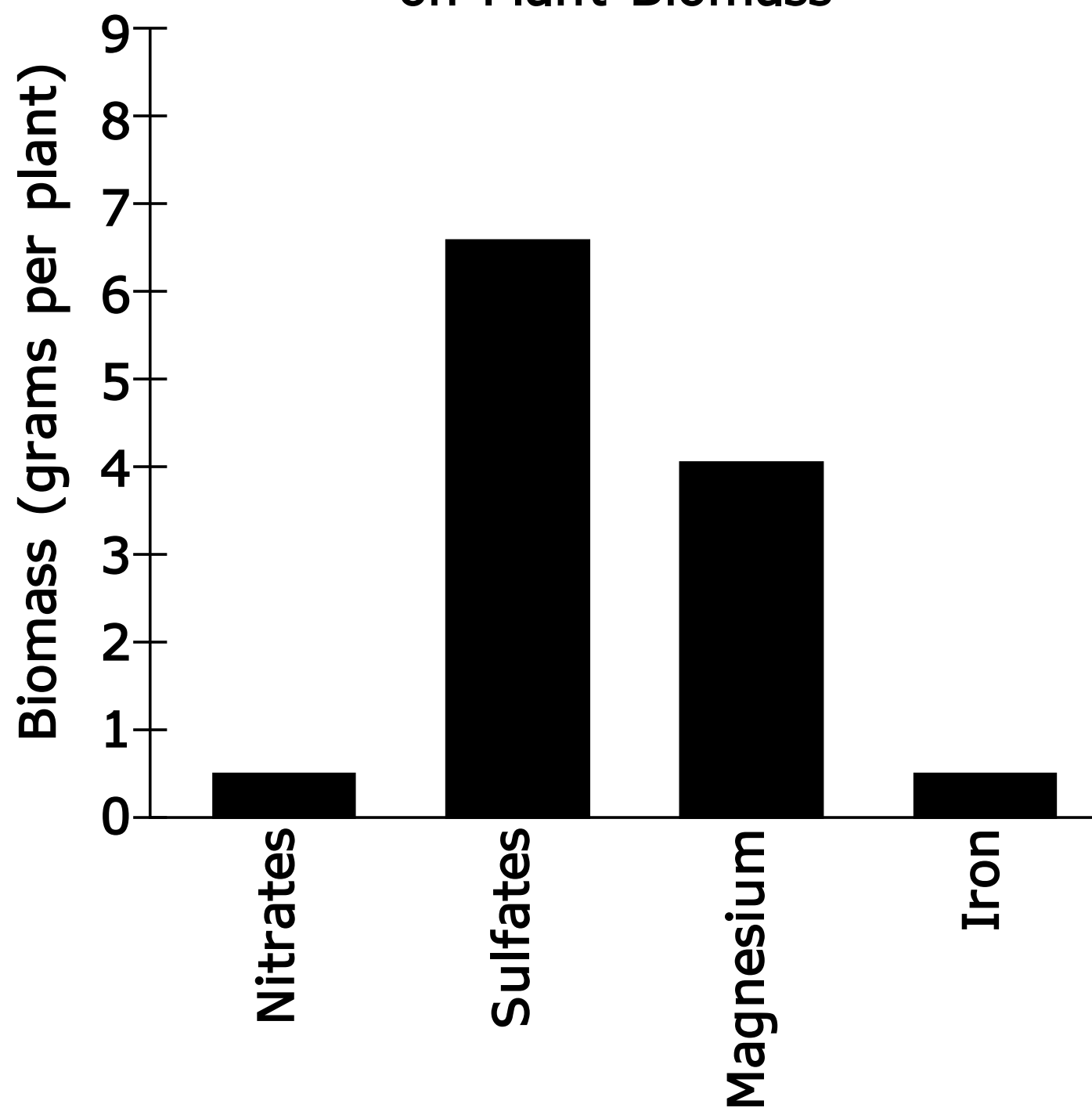
Both light bulbs are lit in the circuit above. In order to turn off both lights, a switch must be installed in the circuit at the place marked

- F 1
- G 2
- H 3
- J 4

39 Calcium metal (Ca) can be produced by passing an electric current through molten calcium chloride (CaCl_2). Chlorine gas (Cl_2) is also formed. What is the balanced equation for this reaction?



Effects of Various Substances
on Plant Biomass



Non-nutritive Potting Soil With
Different Substances Added

According to this graph, which of these is most important in developing the biomass of these plants?

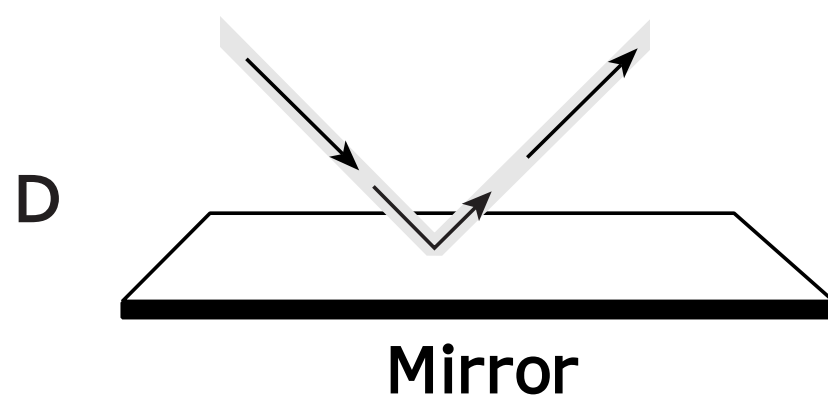
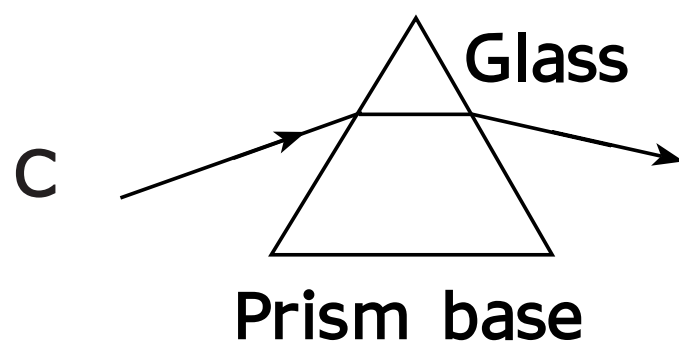
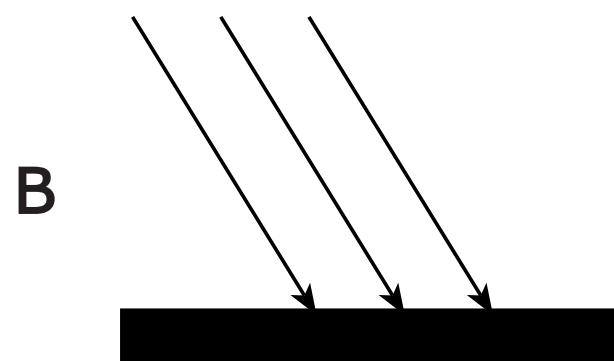
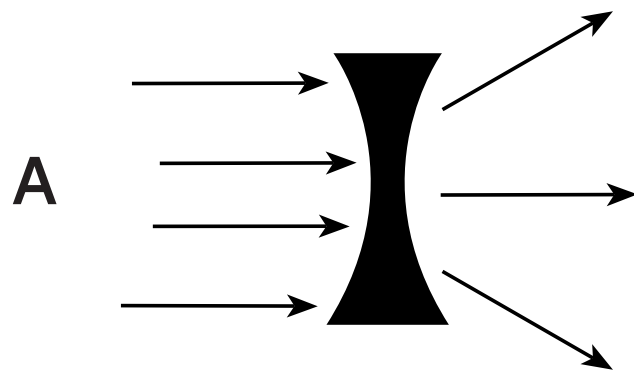
F Nitrates

G Sulfates

H Magnesium

J Iron

41 Which diagram best shows the reflection of light?



42 The density of an object is dependent upon the object's mass and

F height

G area

H volume

J weight

43 Which of these has the MOST influence on ocean tides?

A The magnetic field of the Earth

B Gravity between the Earth and the moon

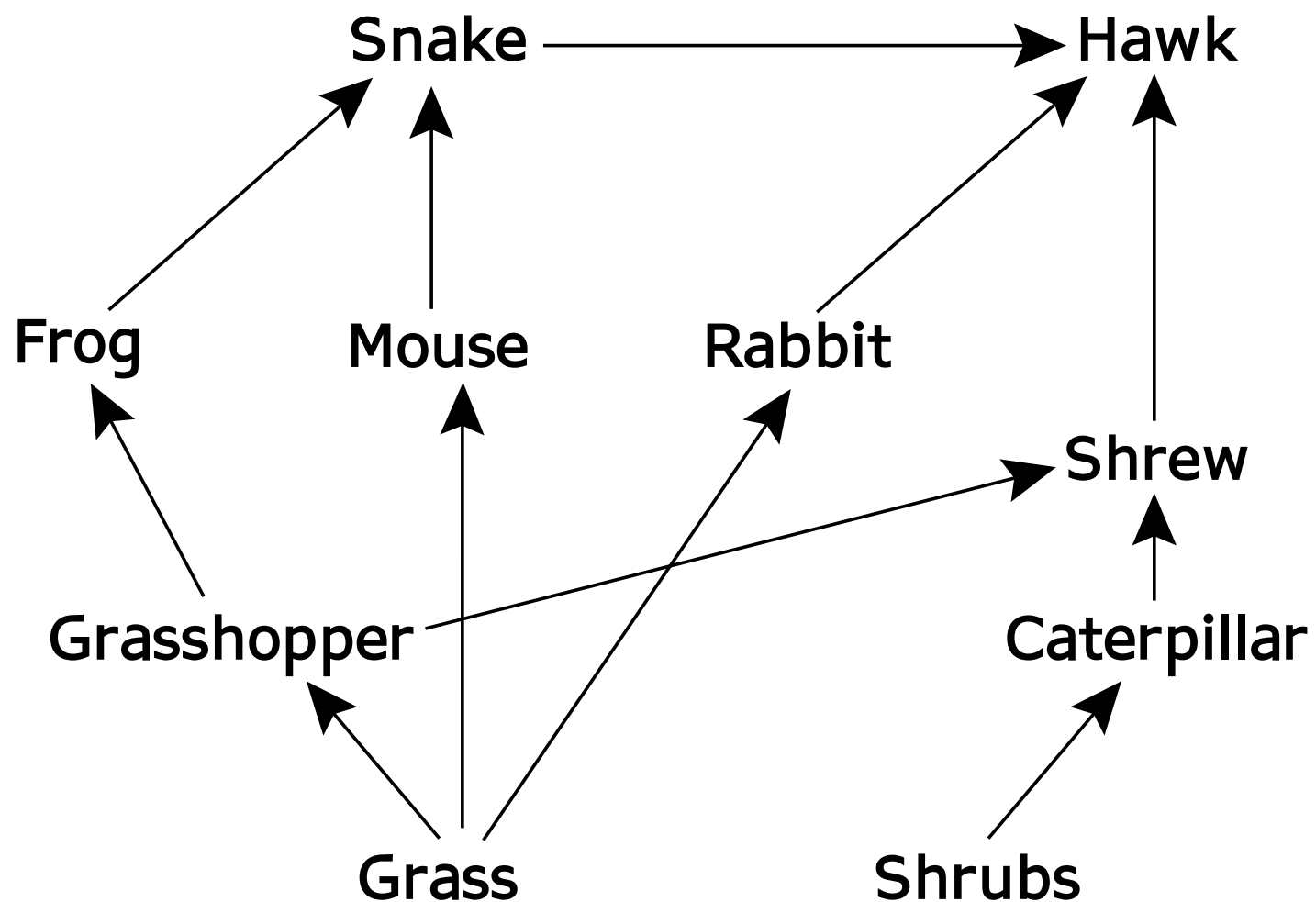
C Radiation from the sun

D Electrical forces in the atmosphere

44 John and Emily were experimenting with the effects of road salt on plant growth. To do this, they watered plants daily with the same amount of salt water. They could BEST improve their experiment by

- F increasing the amount of salt added to the water each day
- G cooling the salt water before watering the plants
- H adding food color to see how far the salt penetrates the plants
- J watering half the plants with pure water and half with salt water

45



In this food web, which organism has the greatest number of food sources?

- A Snake
- B Hawk
- C Shrew
- D Mouse

46 In which of the following environments would you expect to find the greatest number of different species of plants and animals per square mile?

F An island near the South Pole

G A wheat field in North Dakota

H A pasture on a Virginia farm

J A tropical rain forest in Panama

Answer Key

Test Sequence	Correct Answer	Reporting Category	Reporting Category Description
1	B	016	Force, Motion, Energy, and Matter
2	F	016	Force, Motion, Energy, and Matter
3	A	017	Life Systems
4	G	018	Ecosystems
5	B	017	Life Systems
6	G	016	Force, Motion, Energy, and Matter
7	C	015	Scientific Investigation
8	J	018	Ecosystems
9	B	019	Earth and Space Systems
10	F	015	Scientific Investigation
11	C	016	Force, Motion, Energy, and Matter
12	H	015	Scientific Investigation
13	B	015	Scientific Investigation
14	J	019	Earth and Space Systems
15	D	016	Force, Motion, Energy, and Matter
16	F	016	Force, Motion, Energy, and Matter
17	C	019	Earth and Space Systems
18	J	018	Ecosystems
19	C	017	Life Systems
20	G	017	Life Systems
21	C	016	Force, Motion, Energy, and Matter
22	F	015	Scientific Investigation
23	A	016	Force, Motion, Energy, and Matter
24	J	019	Earth and Space Systems
25	C	017	Life Systems
26	G	018	Ecosystems
27	A	016	Force, Motion, Energy, and Matter
28	F	016	Force, Motion, Energy, and Matter
29	D	016	Force, Motion, Energy, and Matter
30	H	015	Scientific Investigation
31	D	015	Scientific Investigation
32	G	016	Force, Motion, Energy, and Matter
33	C	017	Life Systems
34	H	016	Force, Motion, Energy, and Matter
35	A	018	Ecosystems
36	F	018	Ecosystems
37	A	017	Life Systems
38	F	016	Force, Motion, Energy, and Matter
39	D	016	Force, Motion, Energy, and Matter
40	G	015	Scientific Investigation
41	D	016	Force, Motion, Energy, and Matter
42	H	016	Force, Motion, Energy, and Matter
43	B	019	Earth and Space Systems
44	J	015	Scientific Investigation
45	B	018	Ecosystems
46	J	019	Earth and Space Systems



1 2 3 4 5 6 7 8 9 10 11 12 A B C D E